

Claims

1. An isolated polypeptide comprising the amino acid sequence of Seq. ID No. 4 or an amino acid sequence that is at least 50% homologous with Seq. ID No. 4, wherein an antibody
5 that binds to the polypeptide inhibits the adherence or internalization of *Streptococcus uberis* to bovine mammary cells.
2. The isolated polypeptide of claim 1 which is at least 60% homologous with Seq. ID No. 4.
- 10 3. The isolated polypeptide of claim 1 which is at least 70% homologous with Seq. ID No. 4.
4. The isolated polypeptide of claim 1 which is at least 80% homologous with Seq. ID No. 4.
5. The isolated polypeptide of claim 1 which is at
15 least 90% homologous with Seq. ID No. 4.
6. An isolated polypeptide comprising the amino acid sequence of Seq. ID No. 2 or Seq. ID No. 15, or an amino acid sequence that is at least 50% homologous with either Seq. ID No. 2 or Seq. ID No. 15, wherein an antibody that binds to the

polypeptide inhibits the adherence or internalization of *Streptococcus uberis* to bovine mammary cells.

7. The isolated polypeptide of claim 6 which is at
5 least 60% homologous with Seq. ID No. 2 or Seq. No. 15.

8. The isolated polypeptide of claim 6 which is at
least 70% homologous with Seq. ID No. 2 or Seq. No. 15.

9. The isolated polypeptide of claim 6 which is at
least 80% homologous with Seq. ID No. 2 or Seq. No. 15.

10 10. The isolated polypeptide of claim 6 which is at
least 90% homologous with Seq. ID No. 2 of Seq. No. 15.

11. An isolated polypeptide comprising at least 6
sequential amino acids of Seq. ID No. 4, wherein an antibody
that binds to the polypeptide inhibits the adherence or
15 internalization of *Streptococcus uberis* to bovine mammary
cells.

12. The polypeptide of claim 11 which comprises at least
7 to 10 sequential amino acids of Seq. ID No. 4.

13. The polypeptide of claim 11 which comprises at least

9 to 12 sequential amino acids of Seq. ID No. 4.

14. The polypeptide of claim 11 which comprises at least 10 to 15 sequential amino acids of Seq. ID No. 4.

5 15. An isolated nucleic acid comprising a nucleotide sequence that hybridizes under highly stringent conditions to the complement of the nucleotide sequence of Seq. ID No. 5.

16. The nucleic acid of claim 15 that comprises the nucleotide sequence of Seq. ID No. 5.

10 17. The nucleic acid of claim 15 that encodes a polypeptide comprising the amino acid sequence of Seq. ID No. 4.

18. An isolated nucleic acid comprising a nucleotide sequence that hybridizes under highly stringent conditions to 15 the complement of the nucleotide sequence of Seq. ID No. 1 or Seq. ID No. 3.

19. The nucleic acid of claim 18 that hybridizes under highly stringent conditions to the complement of the nucleotide sequence of nucleotides 311 to 2836 of Seq. ID No. 1 or of nucleotides 283 to 2808 of Seq. ID No. 3.

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20. The nucleic acid of claim 18 that hybridizes under highly stringent conditions to the complement of the nucleotide sequence of nucleotides 317 to 2836 of Seq. ID No. 1 or nucleotides 289 to 2808 of Seq. ID No. 3.

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21. The nucleic acid of claim 18 that comprises the nucleotide sequence of Seq. ID No. 1.

22. The nucleic acid of claim 21 that comprises the nucleotide sequence of nucleotides 317 to 2836 of Seq. ID No.

10 1.

23. The nucleic acid of claim 22 that comprises the nucleotide sequence of nucleotides 311 to 2836 of Seq. ID No. 1.

24. The nucleic acid of claim 18 that comprises the nucleotide sequence of Seq. ID No. 3.

25. The nucleic acid of claim 24 that comprises the nucleotide sequence of nucleotides 289 to 2808 of Seq. ID No. 3.

26. The nucleic acid of claim 25 that comprises the nucleotide sequence of nucleotides 283 to 2808 of Seq. ID No. 3.

27. An isolated polypeptide that is encoded by the
5 nucleic acid of claim 18.

28. An isolated polypeptide that is encoded by the nucleic acid of claim 19.

29. An isolated polypeptide that is encoded by the nucleic acid of claim 20.

10 30. An isolated polypeptide that is encoded by the nucleic acid of claim 21.

31. An isolated polypeptide that is encoded by the nucleic acid of claim 22.

32. An isolated polypeptide that is encoded by the
15 nucleic acid of claim 23.

33. An isolated polypeptide that is encoded by the nucleic acid of claim 24.

34. An isolated polypeptide that is encoded by the nucleic acid of claim 25.

35. An isolated polypeptide that is encoded by the nucleic acid of claim 26.

5 36. An isolated antibody that selectively binds to a polypeptide having an amino acid sequence of any 6 to 15 sequential amino acids of Seq. ID No. 4.

10 37. The antibody of claim 36 which inhibits the adherence or the internalization of *S. uberis* to bovine mammary epithelial cells.

38. The antibody of claim 37 which is a monoclonal antibody.

15 39. The antibody of claim 37 which is a polyclonal antibody.

40. An isolated antibody that selectively binds to a polypeptide that is encoded by the nucleic acid of Seq. ID No. 1 or 3 or to a polypeptide that is encoded by a nucleic acid
20 that hybridizes under highly stringent conditions to the

complement of the nucleotide sequence of Seq. ID No. 1 or Seq.
ID No. 3.

41. The antibody of claim 40 which inhibits the
adherence or the internalization of *S. uberis* to bovine
5 mammary epithelial cells.

42. The antibody of claim 40 which is a monoclonal
antibody.

43. The antibody of claim 40 which is a polyclonal
10 antibody.

44. An isolated nucleic acid comprising a nucleotide
sequence selected from the group consisting of Seq. ID Nos. 6,
7, 8, 9, 10, and 11.

15 45. The nucleic acid of claim 44 which consists of a
nucleotide sequence selected from the group consisting of Seq.
ID Nos. 6, 7, 8, 9, 10, and 11.